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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/651,599	Applicant(s) DAVIS, RAYMOND A..	
	Examiner Hung H. Lam	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>08/29/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 13-14 and 17-21, 27 and 30-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyake (US-2001/0,050,721).

With regarding **claim 1**, Miyake discloses a dual camera module comprising two image modules (Figs. 22A-22B; image sensors 2) attached to a flex interconnect (0161-0162; 0236).

With regarding **claim 2**, Miyake discloses a dual camera module wherein sharing control and data lines and at least one component on the flex interconnect (0236: it is inherent that sharing control and data lines and at least one component are on the flexible printed circuit).

With regarding **claim 3**, Miyake discloses a dual camera module each of the image modules comprises a lens and a sensor (lens 3a and image sensor 2; 0015-0017; 0109-0120).

With regarding **claim 4**, Miyake discloses the dual camera module wherein each of the image modules comprises a lens (3a) and a combination sensor-image processor (0149: teaches a designated peripheral element such that ASIC or DSP is used).

With regarding **claim 5**, Miyake discloses the dual camera module wherein the first image module of the two image modules faces a first direction and the second image module of the two image modules faces a second direction (see image sensors 2 in Figs. 22A-22B).

With regarding **claim 13**, Miyake discloses the dual camera wherein a first image module captures images at a first resolution and a second image module captures images at a second resolution (Figs. 22A-22B; 0161-0162: it is inherent that both image sensors 2 capture images at first and second resolution).

With regarding **claim 14**, Miyake discloses the dual camera module wherein a first image module captures images at a first orientation and a second image module captures images at a second orientation (see Figs. 22A-22B; 0161-0162).

With regarding **claim 17**, Miyake discloses an electronic apparatus comprising:

a substrate (Figs. 22A-22B; substrate 1);

a dual camera module connected to said substrate (see Figs. 22A-22B), said dual camera module adapted to capture images, the dual camera module comprising: a first image module adapted to capture images in a first direction (0161-0162); and a second image module adapted to capture images in a second direction (0161-0162; 0236).

With regarding **claim 18**, the claim contains the same limitations as claimed in claim 3. Therefore, claim 18 is analyzed and rejected as claim 3.

With regarding **claim 19**, the claim contains the same limitations as claimed in claim 4. Therefore, claim 19 is analyzed and rejected as claim 4.

With regarding **claim 20**, Miyake discloses the electronic apparatus wherein each of the image modules further comprises an imaging filter (0236).

With regarding **claim 21**, Miyake discloses the electronic apparatus wherein the first direction and the second direction are opposite directions relative to each other (see Figs. 22A-22B; 0161-0162).

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With regarding **claim 27**, Miyake discloses the electronic apparatus further comprising a screen whereon the captured images are displayed (0211; 0214-0216; 0244).

With regarding **claim 30**, the claim contains the same limitations as claimed in claim 13. Therefore, claim 30 is analyzed and rejected as claim 13.

With regarding **claim 31**, Miyake discloses an electronic apparatus comprising:
a substrate (Figs. 22A-22B; substrate 1);
a first image module adapted to capture images mounted on a first side of said substrate (image sensors 2; substrate 1; 0161-0162);
a second image module adapted to capture images mounted on a second side of said substrate (image sensors 2; substrate 1); and
a screen adapted to display images captured by said first image module and by said second image module (0211; 0214-0216; 0244).

With regarding **claim 32**, Miyake discloses the electronic apparatus further comprising a screen whereon the captured images are displayed (0211; 0214-0216; 0244).

With regarding **claim 33**, the claim contains the same limitations as claimed in claim 3. Therefore, claim 33 is analyzed and rejected as claim 3.

With regarding **claim 34**, the claim contains the same limitations as claimed in claim 4. Therefore, claim 34 is analyzed and rejected as claim 4.

With regarding **claim 35**, the claim contains the same limitations as claimed in claim 5. Therefore, claim 35 is analyzed and rejected as claim 5.

3. Claims 31 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuroda (US-2003/0,036,365).

With regarding **claim 31**, Kuroda discloses an electronic apparatus comprising:
a substrate (Figs. 6-7; short or long range camera modules 6 or 10 inherently comprises a substrate);

a first image module adapted to capture images mounted on a first side of said substrate (see Fig. 6-7; short range camera module 6; abstract; 0035-0036);

a second image module adapted to capture images mounted on a second side of said substrate (see Fig. 6-7; long range camera module 10; abstract; 0035-0036); and

a screen (3) adapted to display images captured by said first image module and by said second image module (abstract; 0010-0016; 0034; 0038).

With regarding **claim 36**, Kuroda discloses a method of operating an electronic apparatus, said method comprising:

capturing a scene using a first image module (6) for previewing the scene on a

display (abstract; 0010-0016; 0034; 0038); and

capturing, after the previewing, the scene using a second image module (10) (abstract; 0010-0016; 0034; 0038: Kuroda teaches the switching means for switching between an image from the first photography window and an image from the second photography window).

4. Claim 38 is rejected under 35 U.S.C. 102(b) as being anticipated by Foote (US-2002/0,122,113).

With regarding **claim 38**, Foote discloses a method of operating an electronic apparatus, said method comprising:

capturing a scene using a first image module and a second image module (Fig. 1; see the plurality of camera 10), the two image modules operating simultaneously and synchronously generating a composite image data stream (abstract; 0055-0062: it is inherent that the camera array captures plural images simultaneously and synchronously combine into a single scene for other application such as video conferencing).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6-8, 10-11, 22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake in view of Johnson (US-2006/0,197,847).

It is noted that the USPTO considers the Applicant's "one of" language to be anticipated by any reference containing one of the subsequent corresponding elements.

With regarding **claim 6**, Miyake discloses the dual camera module wherein said each of the image modules are uniquely addressable.

In the same field of endeavor, Johnson teaches an image processor system wherein I2C bus is used for allowing multiple cameras to be connected together (0128: it is inherent that each camera is programmed with a unique I2C address in order to distinguish each one of the multiple cameras). In light of the teaching from Johnson, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Miyake by including an I2C bus in a flexible printed circuit board in order to allow multiple cameras to be connected together (Johnson: 0128).

With regarding **claim 7**, Miyake fails to disclose the dual camera module wherein said both of the image modules respond to a common or global address.

In the same field of endeavor, Johnson teaches an image processor system wherein I2C bus is used for allowing multiple cameras to be connected together (0128). Johnson further teaches that a respective data processing subsystem includes

registers, which are configured according to the present invention to share a common address space (0014). In light of the teaching from Johnson, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Miyake by including an I2C bus in a flexible printed circuit board in order to allow multiple cameras to be connected together (Johnson: 0128).

With regarding **claim 8**, Miyake fails to explicitly disclose the dual camera module wherein said flex interconnect includes an Inter-IC (I2C) bus.

In the same field of endeavor, Johnson teaches an image processor system wherein I2C bus is used for allowing multiple cameras to be connected together (0128). In light of the teaching from Johnson, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Miyake by including an I2C bus in a flexible printed circuit board in order to allow multiple cameras to be connected together (Johnson: 0128).

With regarding **claim 10**, Miyake discloses the dual camera module wherein each of the image modules is programmed to respond to a unique I2C address.

In the same field of endeavor, Johnson teaches an image processor system wherein I2C bus is used for allowing multiple cameras to be connected together (0128: it is inherent that each camera is programmed with a unique I2C address in order to distinguish each one of the multiple cameras). In light of the teaching from Johnson, it would have been obvious to one of ordinary skill in the art at the time the invention was

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made to modify the device of Miyake by including an I2C bus in a flexible printed circuit board in order to allow multiple cameras to be connected together (Johnson: 0128).

With regarding **claim 11**, the claim contains the same limitations as claimed in claim 7. Therefore, claim 11 is analyzed and rejected as claim 7.

With regarding **claim 22**, the claim contains the same limitations as claimed in claim 8. Therefore, claim 22 is analyzed and rejected as claim 8.

With regarding **claim 26**, the claim contains the same limitations as claimed in claim 7. Therefore, claim 26 is analyzed and rejected as claim 7.

7. Claims 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake in view of Kayada (US-2004/0,119,718).

With regarding **claim 12**, Miyake fails to explicitly disclose the dual camera module wherein each of the image modules is configured to tri-state its output signals.

In the same field of endeavor, Kayada teaches a camera system wherein the camera input switching section outputs a signal to turn on/off the output of a tri-state buffer to thereby switch between imaged data from the two camera modules (0051). In light of the teaching from Kayada, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Miyake by including

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the switching section and output tri-state buffer in order to switch between imaged data from two camera modules (Kayada: 0051).

8. Claims 9 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake in view of Stam (US-2004/0,230,358).

With regarding **claim 9**, Miyake fails to disclose the dual camera module wherein said flex interconnect includes a Serial Peripheral Interface (SPI).

In the same field of endeavor, Stam teaches image sensor side LVDS transceivers which are integrated into an imager (Fig. 9c; 901c) along with other components (0260). This integration thus reduces the part count, component cost and imager board area associated with image sensor side LVDS transceivers (0260). Stam further teaches that the communication protocols such that a serial bus, LVDS serial bus, SPI bus or IIC bus may be used to transmit data from the imager to the processor or from the processor to the imager (0260). In light of the teaching from Stam, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Miyake by integrating a serial bus, LVDS serial bus, SPI bus or IIC into an imager along with other components. The modifications thus reduce the part count, components cost and imager board area and provide communication between imager and processor (Stam: 0260).

With regarding **claim 23**, the claim contains the same limitations as claimed in claim 9. Therefore, claim 23 is analyzed and rejected as claim 9.

With regarding **claim 24**, Miyake in view of Stam discloses wherein each of the image modules is programmed to respond to a unique I2C address (Stam: Table 15; 0163; 0267).

9. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake in view of Stam and further in view of Tanha (US-2002/0,108,011).

With regarding **claim 25**, Miyake in view of Stam fails to disclose the electronic apparatus wherein each of the image modules is programmed to respond to a unique slave select on the SPI bus.

In the same field of endeavor, Tanha teaches a dual interface serial bus wherein the same slaves address is used by a device 400 regardless of the protocol selected (I2C or SPI). Tanha further teaches that this saves on having separate slave address registers for each protocol as is done in the prior art (0018). In light of the teaching from Tanha, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Miyake and Stam by using the same slaves address regardless of the protocol selected from I2C or SPI. The modifications thus reduce separate slave address-registers (Tanha:0018).

10. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake in view of Monroe (US-7,057,647).

With regarding **claim 15**, Miyake fails to explicitly disclose the dual camera module wherein a first image module captures images at a first color range and a second image module captures images at a second color range.

In the same field of endeavor, Monroe teaches a dual mode camera having a color image sensor for daylight operation and a monochrome image sensor for nighttime operation (Fig. 1; Col. 5, Ln. 49-59). In light of the teaching from Monroe, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Miyake by having monochrome and color image sensor in order to perform daylight and night time operation. The modifications thus allow the camera to capture better images in the day and night time.

11. Claims 16 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake in view of Kuroda (US-2003/0,036,365).

With regarding **claim 16**, Miyake fails to explicitly disclose the dual camera module wherein a first image module captures images at a first focal length and a second image module captures images at a second focal length.

In the same field of endeavor, Kuroda teaches a dual mode camera having a close-range photography camera module in one side and long-range photography camera module in the opposite side (abstract; 0034-0035; close and long range

photography camera modules inherently comprise a first and second focal length). In light of the teaching from Kuroda, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Miyake by having a close-range photography camera module in one side and long-range photography camera module in the opposite side. The modifications thus reduce the used of shaft mechanism and wiring complication and thus ensuring the reliability of the camera (Kuroda: 0007-0009).

With regarding **claim 29**, the claim contains the same limitations as claimed in claim 16. Therefore, claim 29 is analyzed and rejected as claim 16.

12. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake in view of Wells (US-2004/0,179,600).

With regarding **claim 28**, Miyake fails to explicitly disclose the electronic apparatus further comprising a screen whereon a first captured image from the first image module is displayed simultaneously with a second captured image from the second image module.

In the same field of endeavor, Wells teaches an imaging system (Fig. 7; 100') wherein one of the output signals ENC_a to ENC_k may be generated to contain conventional picture-in-picture (PIP) type resolution video streams for normal "digest" viewing of multiple cameras (0028). Wells further teaches the output signal ENC may

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be multiplex to one of the output video signals for viewing on a single monitor screen (0028). In light of the teaching from Wells, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Miyake by multiplexing the video output of the multiple cameras for viewing PIP on a single monitor screen. The modifications thus provide a more versatile camera.

13. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda in view of Sasaki (US-7,030,927).

With regarding **claim 37**, Kuroda fails to disclose the method wherein the second image module captures the scene at a higher resolution than the first image module.

In the same field of endeavor, Sasaki teaches a camera comprising a high resolution image pickup device for recording and a low resolution image pickup device for detecting focusing status (abstract; Col. 4, Ln. 1-25). Sasaki further teaches the present invention thus provide an apparatus for detecting a focusing status of a taking lens that reduces cost, power and circuit size (Col. 1, Ln. 60-67). In light of the teaching from Sasaki, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Kuroda by having a low and high resolution image sensors for detecting focusing status and recording. The modifications thus reduce cost, power and circuit size (Sasaki: Col. 1, Ln. 60-67).

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14. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Foote in view of Kayada (US-2004/0,119,718).

With regarding **claim 39**, Foote fails to explicitly the method wherein the composite image data stream is generated on a shared tri-state bus.

In the same field of endeavor, Kayada teaches a camera system wherein the camera input switching section outputs a signal to turn on/off the output of a tri-state buffer to thereby switch between imaged data from the two camera modules (0051). In light of the teaching from Kayada, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Foote by including the switching section and output tri-state buffer in order to switch between imaged data from two camera modules (Kayada: 0051).

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Miyake (US-2002/0,057,344) discloses mobile phone having dual image sensors.

b) Otake (US-5,509,663) discloses an image processing wherein a tristate gate

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enables a priority circuitry to provide a single composite video data of a moving picture and still picture data.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung H. Lam whose telephone number is 571-272-7367. The examiner can normally be reached on Monday - Friday 8AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SRIVASTAVA VIVEK can be reached on 571-272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HL
06/20/07

JAMES M. HAZZETT
ART UNIT 2622

